

Office of Environmental Management – Grand Junction



Moab UMTRA Project Transportation Plan

Revision 3

January 2009



U.S. Department
of Energy

Office of Environmental Management

**Moab UMTRA Project
Transportation Plan**

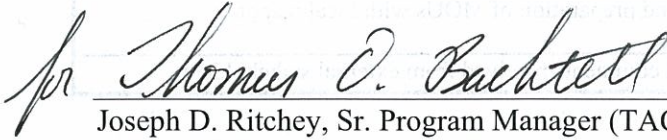
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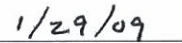
Revision 3

Review and Approval


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Date


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Date

Accepted by:


Donald R. Metzler, Federal Project Director


Date

Revision History

Revision No.	Date	Reason/Basis for Revision
0	August 2008	Initial Issue of the Plan (DOE-EM/GJ1639-2008) by the Technical Assistance Contractor under DOE Contract No. DE-AC30-07CC60012 and the Remedial Action Contractor under DOE Contract No. DE-AT30-07CC00014.
1	October 2008	Transportation Plan (DOE-EM/GJ1639) updated to include truck transportation plans and requirements and a contacts list.
2	November 2008	Updated to reflect changes in contacts list, modifications to ERP references, and preparation of MOUs with local response organizations.
3	January 2009	Incorporated comments received from external stakeholders.

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Attachment

Attachment 1. Emergency Response Contacts Attachment 1 is not issued for public release

Acronyms and Abbreviations

ASTM	American Society for Testing and Materials
CFR	<i>Code of Federal Regulations</i>
DOE	U.S. Department of Energy
DOT	Department of Transportation
EIS	Environmental Impact Statement
EM	Environmental Management
ERP	Emergency Response Plan
FPD	Federal Project Director
I-70	Interstate Highway 70
MCEP	Motor Carrier Evaluation Program
RAC	Remedial Action Contractor
RCT	Radiological Control Technician
RRM	residual radioactive material
SR	State Route
TAC	Technical Assistance Contractor
UMTRA	Uranium Mill Tailings Remedial Action

1.0 Introduction

1.1 Purpose and Scope

This *Transportation Plan* describes operations that will ensure safe and successful staging and transportation of residual radioactive material (RRM) from the Moab Uranium Mill Tailings Remedial Action (UMTRA) Project site in Utah to the disposal cell at Crescent Junction, Utah. The primary mode of transportation will be by rail; however, some RRM will be transported by truck. All transportation operations will be conducted in compliance with applicable federal, state, and local requirements governing materials transportation with any approved exemptions or alternatives. This plan will be reviewed periodically, but no less than annually, and modified as needed.

This plan is consistent with U.S. Department of Energy (DOE) Manual 460.2-1, *Radioactive Material Transportation Practices Manual*, and the Environmental Management (EM)-11 guidance memorandum dated July 13, 2005, for preparation of transportation plans and notification requirements issued by EM-3 on April 24, 2008. As allowed in the guidance memorandum, this plan provides a graded approach to describing transportation and disposal of the Moab RRM, including on site staging, logistics, and packaging configuration. This plan addresses the applicable topics recommended in the guidance memorandum. This plan also meets the intent of DOE Order (O) 460.1B, Packaging and Transportation Safety, and DOE O 460.2A, Departmental Materials Transportation and Packaging Management. Emergency response and associated notifications in the event of an incident are presented in the Moab UMTRA Project *Emergency Response Plan* (ERP) (DOE-EM/GJ1520). Interaction with the community and other stakeholders is presented in the Moab UMTRA Project *Public Participation Plan* (DOE-EM/GJ1542).

RRM is defined by the Uranium Mill Tailings Radiation Control Act of 1978 and the implementing regulations in 40 *Code of Federal Regulations* (CFR) Part 192 as: (1) waste that the DOE determines to be radioactive in the form of tailings resulting from the processing of ores for the extraction of uranium and other valuable constituents of the ores; and (2) other wastes that DOE determines to be radioactive at a processing site that relate to such processing, including any residual stock of unprocessed ores or low-grade materials. At the Moab site, RRM includes soils, tailings, facility components, buildings or building materials, equipment, and other wastes. RRM from the Moab site will be shipped in accordance with Special Permit Authorization DOT-SP 14283 issued by the U.S. Department of Transportation (DOT) on February 25, 2008.

RRM is not low-level radioactive waste as per Section 11e(2) of the Atomic Energy Act, as amended. The tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material (i.e., uranium or thorium) content is defined as a byproduct material.

1.2 Background

The Moab site (formerly known as the Atlas millsite) is a former uranium-ore processing facility located about 3 miles northwest of the city of Moab in Grand County, Utah (Figure 1) and lies on the west bank of the Colorado River at the confluence with the Moab Wash. The Crescent

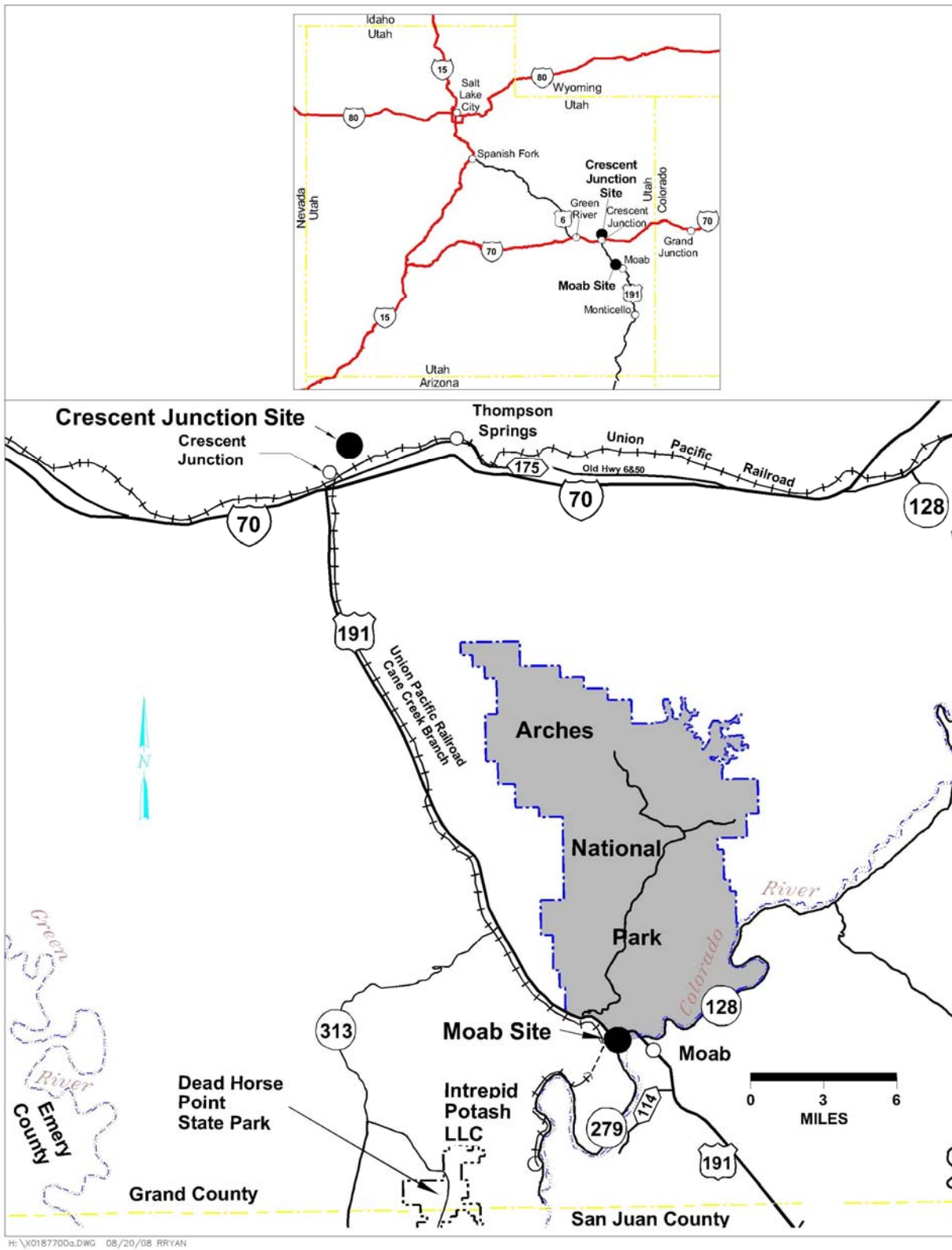


Figure 1. Location of Moab and Crescent Junction Sites

Junction disposal site is located northeast of the junction of Interstate Highway 70 (I-70) and U.S. Highway 191 approximately 30 miles north of the Moab site and was selected as the permanent disposal site for the Moab uranium mill tailings, in part, because of the excellent geologic setting and the proximity to rail and truck service. Five hundred acres at the Crescent Junction site were permanently transferred to DOE from the U.S. Department of Interior for the disposal cell. An additional 1,800 acres is in temporary withdrawal to support construction.

The Moab site encompasses approximately 400 acres; a 130-acre, 12-million-cubic-yard uranium mill tailings pile occupies much of the western portion. Steep sandstone cliffs border the site on the north and southwest. The Colorado River forms the southeastern boundary of the site. U.S. Highway 191 parallels the northern site boundary, and State Route (SR) 279 crosses the western portion of the site. The entrance to Arches National Park is located less than 1 mile northwest of the site across U.S. Highway 191. Union Pacific Railroad Company (Union Pacific) rail traverses a small section of the site just west of SR 279, then enters a tunnel and emerges several miles to the southwest.

On October 25, 2001, DOE assumed ownership of the Moab site. The DOE EM Grand Junction office in Colorado is responsible for reclamation of the site. In July 2005, DOE published the final Environmental Impact Statement (EIS) that presented the preferred alternative of off site disposal of the mill tailings and other contaminated materials at the proposed Crescent Junction disposal site using predominantly rail transportation. DOE issued the Record of Decision in September 2005 and amended it in February 2008 to include the option for more transport via trucking.

In June 2007, DOE awarded two new contracts for the project: the Remedial Action Contractor (RAC) contract was awarded to EnergySolutions Federal Services, Inc., and the Technical Assistance Contractor (TAC) contract was awarded to S&K Aerospace, Inc. The RAC is responsible for finalizing the design for moving the tailings to Crescent Junction, developing the tailings-removal system, building the disposal cell, beginning transport of the tailings, and handling day-to-day maintenance and operations at the Moab and Crescent Junction sites. The TAC provides technical and administrative support services to DOE.

1.3 Project Approach

The project approach is to excavate RRM at the Moab site and condition it to the desired soil moisture content for placement in the disposal cell. The conditioned RRM will be top-loaded into containers, transported by off-road trucks to the on site Support Area where the container receives a solid metal lid, then moved to a station where a radiological survey of the container exterior is performed.

A radiological boundary separates the Support Area into a Contaminated Area and Uncontaminated Area. Once the container is radiologically released for transfer from the Contaminated Area to the Uncontaminated Area and to outside of project-controlled areas, it is placed on a separate truck, hauled up a dedicated road to the rail load out area at Union Pacific's Emkay siding, and transferred to a railcar. To transport containers from the Support Area to the load out area, the trucks will cross SR 279. The project will comply with federal, state, and local requirements for trucks crossing SR 279 in support of this transfer, including access permits with the state of Utah and a special permit with U.S. DOT. DOE will implement several measures to

mitigate potential safety concerns associated with this crossing, such as motorists inadvertently turning onto the haul road. These measures are addressed in the crossing permit requested by DOE from Utah DOT (UDOT) and include use of flaggers on either side of the crossing, installing gates to prohibit access to the haul road during off-hours, installing signs on SR 279 to warn motorists of the approaching construction area, and yielding the right-of-way to SR 279 traffic. Once transport operations begin, the haul truck crossing will be monitored and evaluated for possible additional safety improvements.

Once the designated number of containers are placed on railcars, Union Pacific engines will pull the cars to a DOE siding to be constructed near the Crescent Junction disposal cell about ½-mile east of the existing Brendel siding. Each container will be removed from the railcar, placed on a truck, and driven to the disposal cell. The containers will be emptied via the rear dump gate, decontaminated as required, radiologically surveyed, and released for the return trip to the Moab site.

Radiologically surveying the containers is not required by the special permit, but has been deemed a best management practice by the project. The survey will consist of taking a smear or a large area wipe of the exterior of the container and obtaining an activity count using an appropriate meter to determine the level of removable contamination, if any.

RRM that cannot be sized to fit in a container will be transported via over-the-road trucks using DOE Motor Carrier Evaluation Program (MCEP)-approved motor carriers from the Moab site to the Crescent Junction site. RRM excavated from off site properties in the Moab area, known as vicinity properties, may also be transported directly to the Crescent Junction disposal site by truck. Temporary shipment of containers by truck on U.S. Highway 191 may be performed in the event that rail shipments are suspended for an extended period. Trucks departing from the Moab site will enter U.S. Highway 191 from SR 279. Prior to any shipment of containers by truck on the highway, the project will coordinate with Grand County officials and UDOT.

1.4 Organizational Responsibilities

The roles and responsibilities of the Moab Project DOE staff are under the direction of the Federal Project Director (FPD). The FPD provides technical direction and guidance to the contractor for the safe, efficient, high-quality, and cost-effective execution of the project, including transportation of the RRM.

DOE Facility Representatives for the Moab mill tailings site and the Crescent Junction disposal site are the primary points of contact between DOE and the contractors for transportation activities. DOE Facility Representatives perform inspections, surveillances, and reviews in accordance with established procedures.

The RAC is responsible for operating and maintaining the tailings removal and disposal of the RRM. The RAC Operations Manager is the Transportation Manager responsible for packaging and handling the RRM shipment before the train departs the Moab site and until its arrival at the Crescent Junction site. According to DOE policy, all RRM shipments from the Moab site will be tracked using the Automated Shipment Approval System. The Transportation Manager has the authority to approve requests for planned shipments in this system and is responsible for

providing information on planned versus actual shipments and other shipment details to DOE Headquarters.

The TAC scope of work includes quality assurance and safety support, property management, and public affairs assistance to DOE for transportation activities.

DOE Headquarters provides guidance and support in coordinating with the U.S. DOT and cooperating organizations and in providing planning and training through the Transportation Emergency Preparedness Program.

Upon receipt of the shipping documents from the RAC, Union Pacific assumes responsibility for the rail shipment in compliance with federal and state regulations and Association of American Railroads standards. Union Pacific relinquishes responsibility for the shipment back to the RAC upon arrival at the Crescent Junction site and transfer of the shipping documents. RRM transported via over-the-road trucks will be the responsibility of the trucking company. The carrier is responsible for recovery of RRM resulting from a transportation incident or accident.

2.0 On-Site Material Management

2.1 Material Description

The primary material to be transported is tailings, which are the result of uranium extraction in the milling process. The tailings were slurried to an unlined impoundment that accumulated over time, forming a pile. The tailings pile material is in a soil matrix varying in consistency from very dry and sand-like on the periphery to wet, muddy slimes inside the pile. Wet material will be conditioned at the excavation area until it meets the desired moisture content for transport to drying pads located on top of the tailings pile. Conditioning may include blending with drier material. Drying pads will be used to further reduce the moisture content to a range that is optimal for compaction in the disposal cell. The optimal moisture content easily meets the classification as a solid as defined by Standard Test Method for Determining Whether a Material is a Liquid or a Solid [American Society for Testing and Materials (ASTM) D4359-90], which is a regulatory requirement for the U.S. DOT.

2.1.1 Managing Anomalies

The RAC has chosen to begin excavation in an area on the pile which, according to historical data, should avoid contact with debris from the former milling operations. However, through past UMTRA experience, some anomalies will be encountered. Work plans, as part of the Integrated Safety Management System, will address handling of unexpected items during excavation to minimize risking site personnel safety, harming the environment, or delaying the work.

2.1.2 Construction and Demolition Debris

Construction and demolition debris may be in the form of steel beams, concrete slabs, concrete blocks, piping, sheet metal, and demolished milling equipment. In addition, 17,000 vertical band drains (wicks) and manifolds are located a few feet below the surface near the center of the tailings pile. When these items are found during excavation of the pile, they will be sorted into three groups:

- Items that will fit into containers as-is,

- Items that will have to be size-reduced before placement in containers, and
- Potentially hazardous items that require additional characterization for safe materials handling.

Items That Will Fit Into Containers:

Smaller items that fit in containers will be hauled to one of the on site stockpile areas until sufficient quantities are available to enable efficient filling of containers.

Items Requiring Size Reduction:

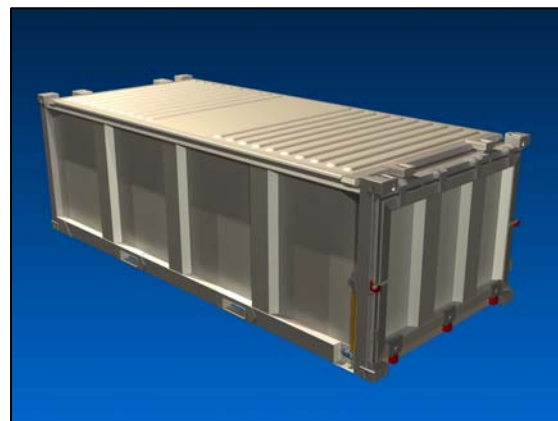
A specific work plan will be developed for larger items, such as lengths of steel beam and pipe or concrete slabs that may not pass under the tailgates of containers when they are emptied at the Crescent Junction disposal site. The work plan will address how these items will be reduced in size prior to transport. Wick drains and manifolds excavated with the tailings will be reduced in size prior to loading directly into containers.

Potentially Hazardous Items:

If unknown, potentially hazardous items are encountered during tailings pile excavation, the RAC will suspend work in that area until a specific work plan is developed to address the material. Items may include transite- and asbestos-containing insulation material commonly used in buildings during the period when the original site facilities were constructed.

2.1.3 Drums and Other Containers

The RAC does not expect to find hazardous materials in the form of drums and other containers such as gas cylinders during excavation. However, if such items are uncovered, they present more danger to site workers and the environment than demolition debris due to unknown content and condition of the container. Site workers will be trained to observe the material being excavated, and if drums or other containers are identified, work will be suspended, and the RAC Site Manager and Health and Safety Technician will be notified. Excavation activities may be shifted away from the unidentified container until a hazard analysis and modification to the work plan have been completed and the workers briefed.



Example of RRM Container

2.2 Packaging

The design of packaging for RRM for rail transport is based on an existing 32-cubic-yard container (6.42-yard length by 2.63-yard depth by 2.0-yard height). The container will be loaded with 39.5 tons of RRM. The RRM containers are constructed of steel, in compliance with U.S. DOT standards. The containers have a removable steel lid that locks in place. The dump doors have a waterproof gasket and a self-locking sealing mechanism.

Each container will be identified with a unique number and will be placarded on two opposite sides with Radioactive-Yellow II signs in accordance with the special permit. An example of the



Example of Container Placard

placard that will appear is provided. The placards will remain visible during transport to and from Crescent Junction. In addition, each container will be labeled in accordance with the special permit as shown below. The label will be permanently applied to each container. The gross weight includes the weight of the container and lid.

Documentation that will accompany each shipment, both to Crescent Junction and back to Moab, includes the following: the rail shipment identification number assigned by Union Pacific, the shipping date, the list of container identification numbers, the container contents, and a summary of the container exterior radiological survey results. The carrier will also possess a copy of the special permit, exclusive use instructions, and its emergency response plan during each shipment. On the return trip, the container contents and weight will indicate "empty."

**For Radioactive
Materials Use Only
RQ, RADIOACTIVE-LSA
UN3321
DOE-SP 14283**

**Gross Weight:
87,800 lbs.
Emergency Contact:
EnergySolutions
Emergency Phone:
970-201-6021**

Container Marking

Packaging for oversize debris, primarily from demolition of the former mill, will be dump trucks or trailers with a soft cover. Trucks used to transport oversized material will be loaded using an excavator, loader, or crane depending on the type of material. The loading will occur inside of the Contaminated Area, so care will be taken to limit contact between the vehicle and RRM. Following loading, a sturdy fabric cover will be placed over the RRM, and the truck will proceed to a decontamination pad for an exterior survey.

2.3 Radiological Surveys

The exterior of the filled containers will be radiologically surveyed in the Support Area and verified to be uncontaminated before the containers are released for transport to the Crescent Junction site. A row of survey racks will hold containers while they are surveyed and any spots of contamination are removed. The racks support the containers 2 feet off the ground so that swipes of the bottom of containers can be obtained. A rolling stair/platform will provide access to the top of the containers. Once a container is released, the reach stacker will move it from the rack to a staging area for filled containers that are awaiting transfer to the rail.

Trucks used to haul oversized material will be surveyed prior to exiting the Contaminated Area.

Data from the radiological surveys becomes part of the shipment documentation maintained by the Transportation Manager in accordance with 49 CFR 172.602(a) and 172.602(c)(2).

2.4 Container Movements

The rail container-filling process consists of the following steps:

- A truck is driven along the contaminated side of the Contaminated Area boundary.
- A reach stacker lifts an empty container with a lid from the uncontaminated side over the Contaminated Area boundary and loads it onto the truck.
- The truck proceeds into the lidding structure where a crane removes the lid from the container. The truck travels up to the tailings pile to a stockpile of blended and prepared RRM, and the container is filled with approximately 39.5 tons of material. The RRM will be loaded through a chute to minimize contaminating the exterior of the container.
- The truck travels to a scale to verify the load is within acceptable limits.
- The truck returns to the lidding structure where a crane places a lid on the container and locks it in place.
- The truck proceeds out of the lidding structure along the Contaminated Area boundary to a location where a reach stacker removes the container and places it on a rack that is located in a controlled area for a radiological survey.

Some of the areas described in this process are illustrated in Figure 2.

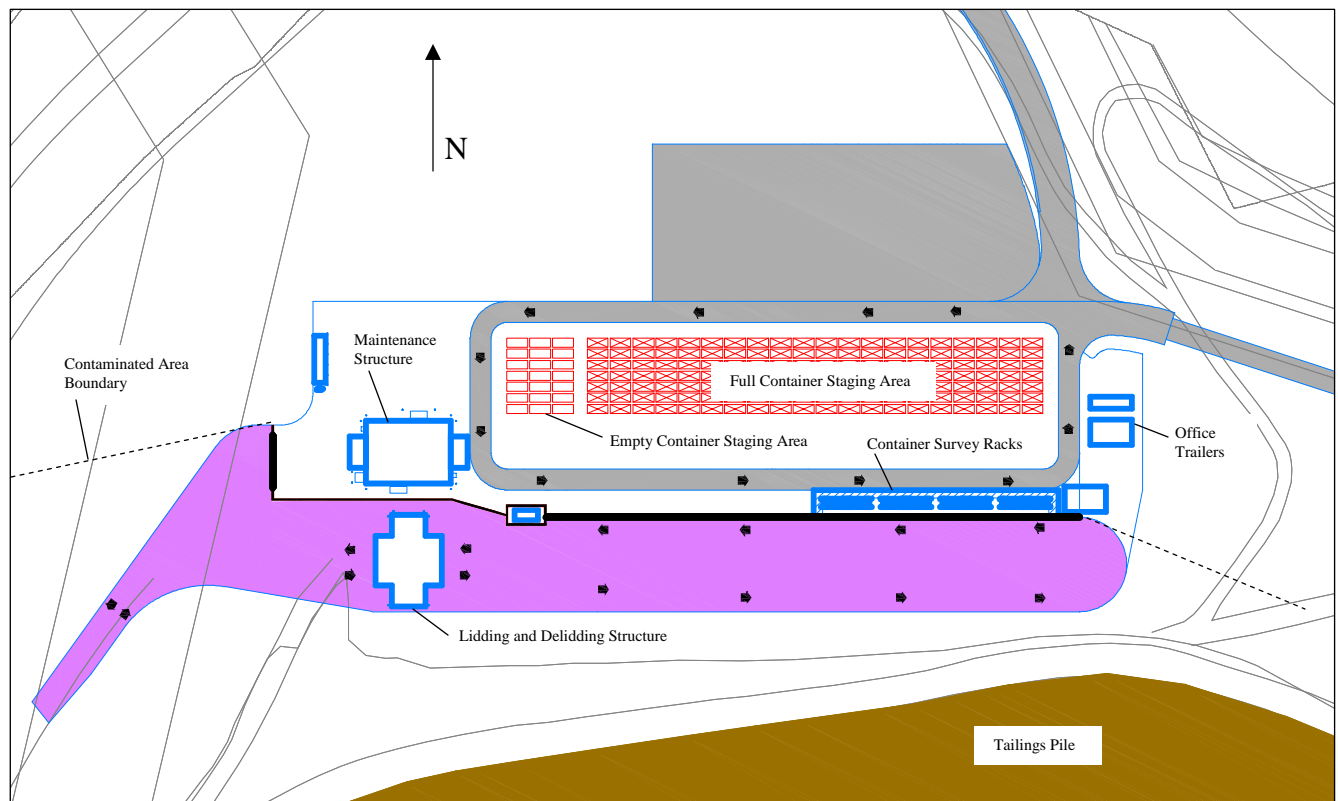


Figure 2. Moab Site Material Handling

At the beginning of each work day, a truck will leave the Support Area at the Moab site, cross SR 279, and go up the haul road to the hillside load out area. The gantry crane will place an empty container on the truck from one of the railcars. The truck will return to the Support Area

where the container is transferred to a truck on the contaminated side to begin the container-filling process. Following the first truck of the day, subsequent trucks will go to the hillside load out area carrying full containers (about 39.5 tons) and will return with empty containers.

The gantry crane will traverse through the course of the day from one end of the rail siding to the other removing empty containers from the railcars and replacing them with full containers. Four containers will be placed end-to-end to fill each railcar.

At the end of the day, when the train is loaded with full containers, it will proceed to the Crescent Junction site and park the full containers on the open siding. Locomotives will be rearranged and connected to the railcars holding empty containers. The train will then return the empty containers to the Moab load out area (Emkay siding).

During the work day at the Crescent Junction site, the full containers will be removed from the railcars using a reach stacker and placed on off-road trucks that will haul the containers to the open area of the disposal cell. While on the trucks, the containers will be emptied through an end gate, decontaminated as necessary, radiologically released, and driven to the rail siding where reach stackers will place them on railcars to be transported back to the Emkay siding. Figure 3 shows the Crescent Junction site layout.

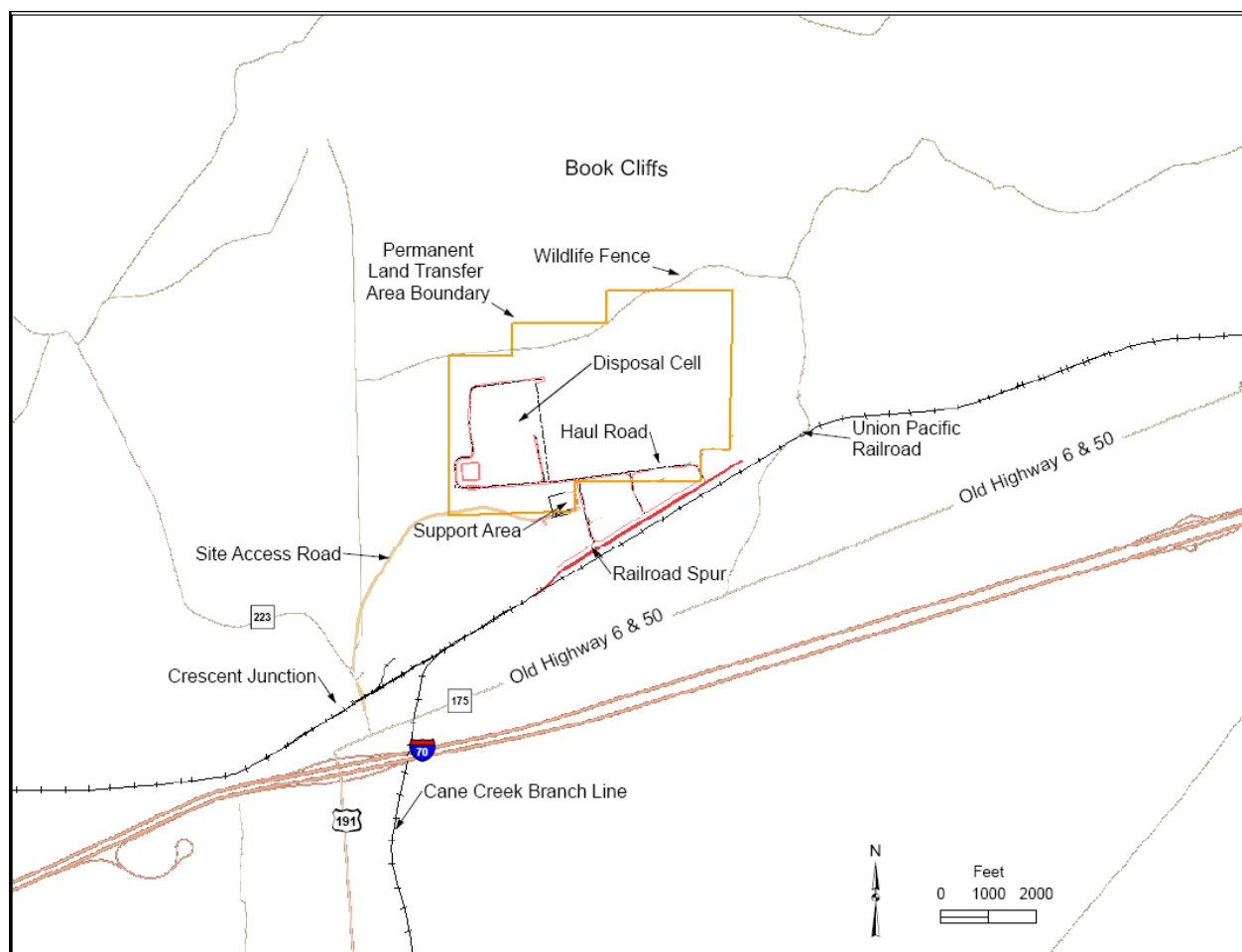


Figure 3. Crescent Junction Site Layout

3.0 Off-Site Transportation

3.1 U.S. DOT and UDOT Requirements

U.S. DOT regulations for transportation of radioactive material are in Title 49 CFR Parts 100-185, Transportation, Hazardous Materials Regulations. DOE received a U.S. DOT Special Permit Authorization, DOT-SP 14283, issued on February 25, 2008 (see Appendix A), for transport of the Moab RRM. The permit expires on January 31, 2012. The permit applies to transport via rail or trucks and establishes alternative requirements for hazard communication and packaging of the RRM.

The DOT-SP 14283 shipping name for the material is radioactive material, low specific activity II, non-fissile or fissile-excepted, with hazard class/division 7, and identification number UN3321. The special permit also requires that uranium mill tailings to be shipped must have an activity concentration of radium-226 no greater than 100 becquerels per gram (2,700 picocuries per gram). Sampling of the contents of individual packages is not required; activity concentrations may instead be determined by DOE-approved site sampling procedures. Further, there must be no leakage of radioactive material from the conveyance. There must be no loose tailings or other contaminated materials on the exterior surface of the covering at any time during transport under normal, nonaccident conditions.

Training will be provided for each hazardous materials (Hazmat) employee, as defined in 49 CFR Part 171.8. Training will be provided for workers who perform a function subject to the special permit. These workers include truck drivers, heavy equipment operators (e.g., crane operators and reach stackers), and Radiological Control Technicians. The U.S. DOT Hazmat training will include the requirements and conditions of the special permit in addition to the training required by 49 CFR Parts 172.700 through 172.704 and 172.800.

Rail transport to the Crescent Junction site involves crossing several public roads that are under the jurisdiction of the U.S. DOT (Federal Railroad Administration Regulations in 49 CFR Parts 200-299). U.S. DOT requirements for rail transport apply to maintaining proper rail crossings and signage of the roadways. The locations of the affected crossings are shown in Figure 4, and a description of each crossing is provided in Table 1.

Truck transport to the Crescent Junction site involves utilizing SR 279, U.S. Highway 191, Old U.S. Highway 6 & 50 (Grand County Road 175), and County Road 223. UDOT requirements apply for highway operations including Federal Motor Carrier Safety Administration regulations in 49 CFR Parts 300-399.

3.2 Rail Materials Transport

3.2.1 Route

Off site rail transport is from the hillside load out area (Emkay siding) and will follow the existing Union Pacific Cane Creek Branch line 28.5 miles to the Green River District line (Branch line mile post 0 and Green River District line mile post 533). Rail transport continues east on the Green River District line approximately 2,000 feet where the new Crescent Junction siding will branch to the north. The total distance from the Emkay siding to the Brendel siding is approximately 30 miles.

3.2.2 Schedule

Two phases of off site materials transport are planned. Phase I consists of one daily train that runs Monday through Thursday (4 days per week) with as many as 22 railcars, each car holding four containers. Phase II consists of one daily train that runs Monday through Thursday (4 days per week) with 34 railcars, each car holding four containers.

The Cane Creek Branch line is also used by Union Pacific to service the Intrepid Potash – Moab, LLC (Potash) located at mile post 36 (see Figures 1 and 3). Potash uses the line for one shipment per week on Friday. The project will coordinate with representatives of Potash to accommodate efficient rail shipments by both parties.

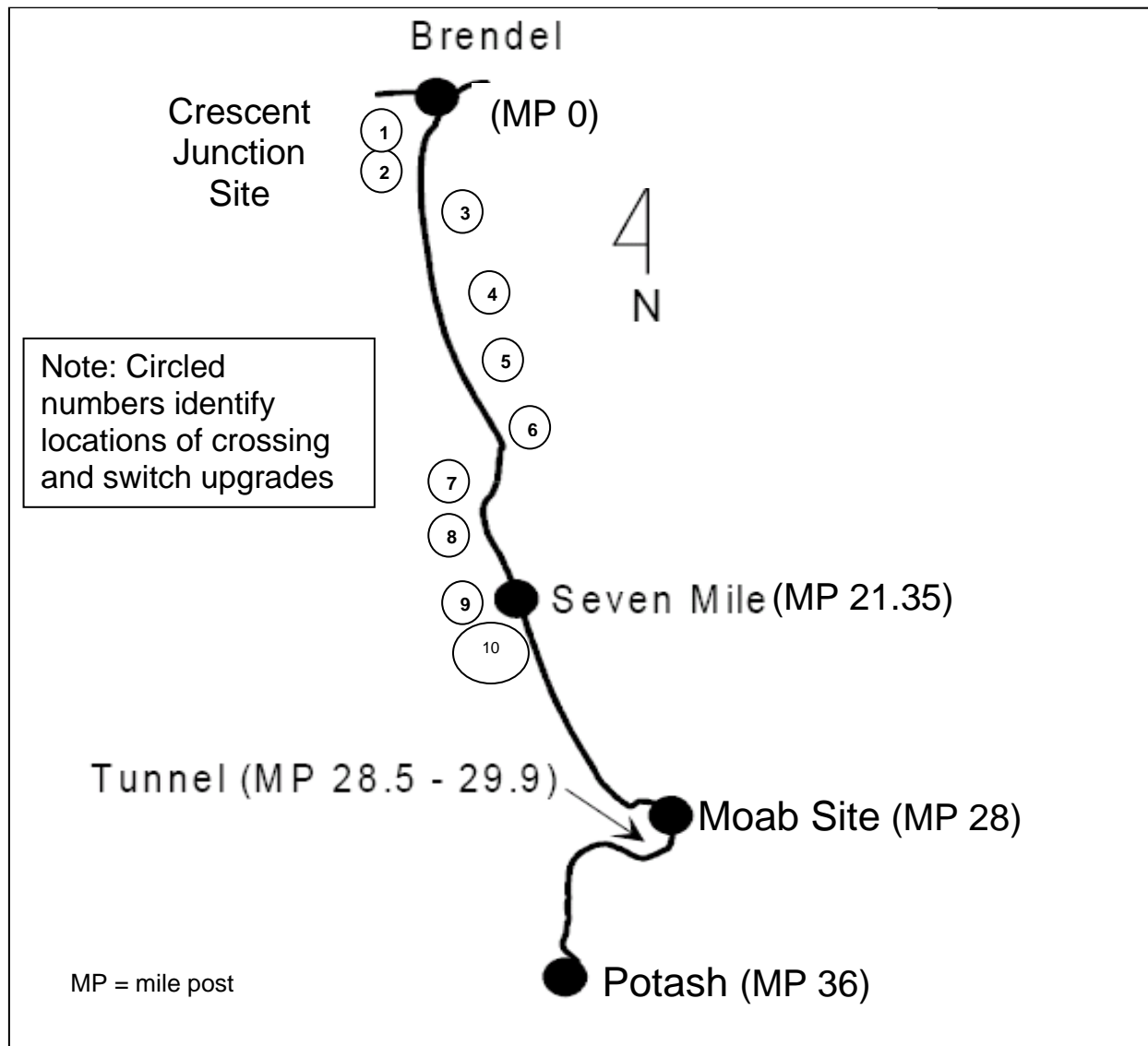


Figure 4. Railroad Route and Crossing Identification

The train will be released from the Moab site (Emkay) between 4:00 p.m. and 6:00 p.m. on each day of shipment. The train will arrive at the Crescent Junction site (Brendel) approximately

90 minutes later. The railcars holding full containers will be staged on the Crescent Junction siding, and railcars holding empty containers that have been unloaded will be readied for transport back to the Moab site that night. The train will take 90 minutes to return to the Emkay siding and will be ready by 6:00 a.m. the next morning for the unloading of empty containers and the loading of full containers. This unloading and reloading process is estimated to take 8 hours.

No specific shipping window is required. Traffic at railroad crossings is heavier on weekends and during seasonal events such as the Jeep Safari Week. To reduce the risk of an incident involving the public, the time of shipment release may be adjusted to avoid peak crossing times.

Table 1. Rail Switch and Crossing Upgrades

No.	Description
1	171G Brendel Road; reconstruct access road; install new flashing lights with gates; replace existing surface; and regrade approach
2	Brendel Switch at Green River District Line; convert hand switch to electronic
3	170A Old Highway 6 & 50 MP 0.3; install guardrail; replace existing surface; existing flashing lights remain
4	172N Valley City Road MP 5.04; install new flashing lights with gates
5	173V Rock Corral Road MP 9.03; replace existing surface and regrade approach; replace existing stop signs on both sides
6	329S Blue Hills Road MP 14.99; replace existing surface and regrade approach; replace existing stop signs on both sides
7	330L private crossing; if converted to public, install new flashing lights with gates; recommend closing and relocating crossing; turn lane off U.S. Highway 191
8	331T Thornburg Mine Road MP 20.30; recommend closing and relocating crossing; if remains open, install new flashing lights with gates; replace existing surface and regrade approach
9	332A SR313 MP 21.35; upgrade to flashing lights with gates; replace existing surface and regrade approach; evaluate feasibility of removing siding from crossing
10	334N Gemini Bridges Road MP 22.50; private crossing; if converted to public, replace existing surface and regrade approach

Based on current funding projections, Phase I shipments are anticipated to be performed until September 2012; Phase II shipments will be performed from October 2012 to March 2027. The estimated number of shipments during Phase I is 680 (88 containers per shipment) carrying 2.3 million tons of RRM and in Phase II is 2,540 (136 containers per shipment) carrying 13.7 million tons. The number of shipments per week may be adjusted to accommodate availability of funds.

3.2.3 Risk

The risk analysis conducted as part of the EIS showed that the risks associated with rail transport were acceptable for both off site workers and the public. Rail transport represents a low risk of public exposure to contaminated materials.

3.2.4 Shipping Weight Limit

Union Pacific has a shipping weight limit of 214.5 tons gross weight per railcar. The planned maximum weight of RRM per container is 39.5 tons. Each railcar will hold four containers for a total weight, including the containers, of 176 tons.

3.3 Truck Materials Transport

Over-the-road truck transport is planned for materials that cannot be effectively sized to fit in the 32-cubic-yard containers. Over-the-road truck transport will be conducted by the DOE MCEP-approved motor carrier and in compliance with the UDOT and U.S. DOT regulations and the special permit.

3.3.1 Route

Off site truck transport is from the Support Area at the Moab site entering at SR 279 near its junction with U.S. Highway 191. Trucks will turn onto U.S. Highway 191 north and follow the four-lane highway up the moderate grade past the entrance to Arches National Park. After about 6 miles, the roadway levels out and passes through an intersection with SR 313. The highway is reduced to two lanes and proceeds approximately 6 miles past the entrance to the Grand County Airport. A few miles further up U.S. Highway 191, the roadway widens to four lanes again for 6 miles before reducing back to two lanes up to the underpass of I-70. At the junction with I-70, trucks continue north 100 feet to an intersection with Old Highway 6 & 50. Trucks make a right turn and proceed 500 feet to an intersection with Grand County Road 223 where they turn left, proceeding 1,000 feet and crossing the Union Pacific Green River District line. Grand County Road 223 branches to the left after 2,000 feet, but the trucks follow the site access road, which curves to the right. Trucks will proceed along the site access road through an entrance gate to a haul road that leads to the working area of the disposal cell. Trucks will be directed through an established Contamination Area boundary to the dump area. Following dumping of RRM, the trucks will move to a survey/decontamination area prior to exiting the Contamination Area and return to the Moab site.

3.3.2 Schedule

Shipments of oversized materials via truck are not anticipated for several years. Consequently, a schedule for this truck transport has not been established. Shipments of material from vicinity properties will be performed as appropriate; however, the limited quantity anticipated does not necessitate a schedule.

3.3.3 Risk

The risk analysis conducted as part of the EIS showed that the risks associated with truck transport were acceptable for both off site workers and the public. Truck transport represents a low risk of public exposure to contaminated materials.

3.3.4 Shipping Weight Limit

The planned maximum weight of RRM in containers hauled on trucks is 32 tons or 20 tons in a haul truck without a container, which meets the standard U.S. DOT shipping weight limit for over-the-road trucks.

4.0 Health and Safety

On site transport work will be performed in compliance with the Moab UMTRA Project *Health and Safety Plan* (DOE-EM/GJ1038). On site workers will be trained to the requirements of the *Health and Safety Plan* and the applicable related site procedures. Off site transport work will be performed by the carrier in accordance with its plans and procedures.

Each Hazmat employee associated with on site or off site transport employed either by the RAC or by a carrier will be trained to meet the requirements of DOT-SP 14283.

Radiation protection will be provided by RAC Radiological Control Technicians (RCTs). All work will comply with the requirements of the *Radiation Protection Program* (DOE-EM/GJ610) and will be conducted under an approved Radiation Work Permit. Radiological support including any personnel monitoring, boundary monitoring, entry and exit surveying, and radiological postings will be provided by the RCTs.

4.1 Security

Transport of RRM will comply with U.S. DOT requirements as applicable in 49 CFR Part 172.800. The Moab UMTRA Project *Transportation Security Plan* (DOE-EM/GJRAC1768) enables confirmation of information provided by job applicants for positions that involve access to and handling of the RRM, off site access to RRM while it is in containers, and security measures while shipments are en route.

The security plan is available to employees responsible for carrying out the plan. All RAC, TAC, and carrier employees subject to the plan will be trained to it. The plan will be revised as necessary and will be managed as a controlled document.

5.0 Emergency Preparedness and Response

Response to emergencies involving transportation of the RRM will be handled according to the ERP and to the requirements of U.S. DOT-SP 14283. Section 4 of the ERP, Emergency Actions, includes a discussion of transportation incidents that addresses events involving rail or truck transport and outlines coordination among responders. Section 12.0 of the *Health and Safety Plan* addresses spill response.

5.1 Notification

The Transportation Manager is responsible for communication and notifications. In the event of an incident, the operator/driver will notify the Transportation Manager via two-way radio or cell phone. The Transportation Manager will make the appropriate additional notifications. Notifications following a transportation incident will include contacts presented in Attachment 1. The Transportation Manager will follow the requirements stated in the April 24, 2008, memorandum from J.M. Owendoff (EM-3) for off site transportation event notification and reporting and DOE Manual 460.2-1, Radioactive Material Transportation Practices Manual, as appropriate.

5.2 Emergency Preparedness

The Moab Fire Department has trained first responders who are prepared to mobilize to emergencies. Additionally, the RAC has trained personnel, supplies, and equipment available at the Moab and Crescent Junction sites to aid in an emergency.

5.3 Emergency Response

The following establishes roles and responsibilities for the emergency response organizations supporting this plan:

5.3.1 Carrier

The operator/driver, if able, will make initial emergency notification, initiate incident scene control, provide assistance to first responders, and undertake other emergency actions in accordance with their policies or instructions. Union Pacific is the primary carrier.

5.3.2 First Responder

First responders to the incident scene will initiate response actions in accordance with local plans and procedures. First responders will likely be representatives from the Moab Fire Department or Grand County Sheriff's Department.

5.3.3 State and County Resources

State and county resources are available using emergency notification procedures. State and county teams are activated by the Incident Commander or other appropriate state or local authority. A representative from the Moab Fire Department or Grand County Sheriff's Department likely would be the Incident Commander.

Memoranda of Understanding are being executed with the Moab Fire Department, Grand County Emergency Medical Services, the Grand County Sheriff's Office, and Allen Memorial Hospital to establish roles and responsibilities for coordination of personnel and operations should an unplanned event occur and will be incorporated by reference.

5.3.4 DOE and Contractor Resources

The RAC Transportation Manager has access to all site resources (personnel, equipment, and supplies) to mitigate an emergency situation. Additional resources are available from the DOE Region 6 Radiological Assistance Program team.

5.4 Recovery

The carrier has responsibility for recovery operations, including RRM cleanup. Recovery will not begin until the emergency situation has been stabilized. The RAC will assist the carrier or its designated recovery contractor in recovery operations where appropriate and in accordance with DOT-SP 14283.

6.0 Public Communications

Communication with the public regarding transportation of the RRM will be conducted in accordance with the Moab UMTRA Project *Public Participation Plan* (DOE-EM/GJ1542). In the event of an emergency or incident involving RRM transportation, public notifications will be made as specified in the ERP.

7.0 References

ASTM, Standard Test Method for Determining Whether a Material is a Liquid or a Solid (D4359-90 (2005)).

DOE *Emergency Response Plan* (DOE-EM/GJ1520), U.S. Department of Energy, Grand Junction, Colorado, February 2008.

DOE Environmental Management (EM-3) Memorandum, *Offsite Transportation Event Notification and Reporting*, from J.M. Owendoff, April 24, 2008.

DOE Environmental Management (EM-11) Memorandum, *Guidelines for Development of Environmental Management Transportation Plans*, F. Marcinowski, July 13, 2005.

DOE *Health and Safety Plan* (DOE-EM/GJ1038), U.S. Department of Energy, Grand Junction, Colorado, February, 2008.

DOE Manual 460.2-1, *Radioactive Material Transportation Practices Manual*, June 4, 2008.

DOE Order 460.1B, *Packaging and Transportation Safety*, April 4, 2003.

DOE Order 460.2A, *Departmental Materials Transportation and Packaging Management*, December 22, 2004.

DOE *Public Participation Plan* (DOE-EM/GJ1542), U.S. Department of Energy, Grand Junction, Colorado, January 2008.

DOE *Radiation Protection Program* (DOE-EM/GJ610), U.S. Department of Energy, Grand Junction, Colorado, September 2007.

DOE *Transportation Security Plan* (DOE-EM/GJRAC1768), U.S. Department of Energy, Grand Junction, Colorado, December 2008.

Title 40 *Code of Federal Regulations* Part 192, Protection of Environment, *Health and Environmental Standards for Uranium and Thorium Mill Tailings*.

Title 42 *United States Code* 2011 et seq., Atomic Energy Act of 1989.

Title 42 *United States Code* 7901 et seq., Uranium Mill Tailings Radiation Control Act of 1978.

Title 49 *Code of Federal Regulations* Parts 100-185, Transportation, *Hazardous Materials Regulations*.

Title 49 *Code of Federal Regulations* Parts 200-299, Transportation, *Federal Railroad Administration Regulations*.

Title 49 *Code of Federal Regulations* Parts 300-399, Transportation, *Federal Motor Carrier Safety Administration Regulations*.

Appendix A
U.S. Department of Transportation Special Permit 14283



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety Administration**

East Building, PHH – 30
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

SPECIAL PERMIT AUTHORIZATION

DOT-SP 14283

EXPIRATION DATE: January 31, 2012

GRANTEE: U.S. Department of Energy (DOE)
Washington, DC

In response to your February 7, 2008 application for renewal of DOT-SP 14283, the grantee status to DOT-SP 14283 for U.S. Department of Energy (DOE) is hereby renewed in accordance with 49 CFR § 107.109.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

If you have questions regarding this action please call the Office of Hazardous Materials Special Permits and Approvals at (202) 366-4535.

Issued in Washington D.C. on **February 25, 2008.**

for Theodore L. Willke
Associate Administrator
for Hazardous Materials Safety

July 27, 2006



U.S. Department
of Transportation

400 Seventh Street, S.W.
Washington, D.C. 20590

**Pipeline and Hazardous
Materials Safety Administration**

DOT-SP 14283

1. GRANTEE: (See individual authorization letter)
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the transportation in commerce of non-DOT specification bulk packages containing uranium mill tailings and debris with low levels of radioactivity from the former Atlas uranium processing facility in Moab, Utah and vicinity locations to a DOE owned disposal facility near Crescent Junction, Utah. This special permit authorizes alternative requirements for hazard communication and packaging. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
 - b. The safety analyses performed in the development of this special permit only considered the hazards and risks associated with transportation in commerce.
 - c. Unless otherwise stated herein, this special permit consists of the special permit authorization letter issued to the grantee together with this document.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 172.302(a), 172.331, 172.332, and 174.59, in that the UN identification number is marked on two sides of each conveyance and intermodal container in the manner described in this special permit; §§ 172.310(b) and (c) in that packages must be transported without the package type and international vehicle registration code markings; § 172.403 in that a Radioactive label is not required; § 173.427(b) in that alternative packaging is authorized; and §§ 173.443(c) and (d), 174.715(a), and 177.843(a) and (b) in that railcars, trucks, or trucks and pups may continue to be used under this special permit to pick up another load without the indicated radiation surveys after unloading.

5. BASIS: This special permit is based on the application of the U.S. Department of Energy dated November 14, 2005, and additional information dated April 24, and June 1, 2006, submitted in accordance with § 107.105, and the public proceeding thereon.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Material Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Radioactive material, low specific activity (LSA-II), <i>non fissile or fissile-excepted</i>	7	UN3321	N/A

7. SAFETY CONTROL MEASURES:
- a. PACKAGING - Authorized packagings are the rail car, intermodal container, haul truck, or pup-trailer, as described in the DOE application on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA). These packagings are considered equivalent to the packagings authorized in § 173.427(b) for LSA-II radioactive material.
- b. OPERATIONAL CONTROLS -
- (1) Loaded rail cars, intermodal containers, haul trucks, and pup-trailers must be covered by a securely fastened hard cover or tarpaulin during transport. The covering used must ensure that there is no inadvertent release of the radioactive contents during transport under normal, non-accident conditions.

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(2) All shipments under this special permit must be consigned as exclusive use. Exclusive use provisions in §§ 173.427(a)(6)(i) through (v) apply.

(3) Uranium mill tailings to be shipped by rail car, haul truck, haul truck with pup-trailer, or intermodal container under this special permit must have an activity concentration of radium-226 no greater than 100 Bq/g (2700 pCi/g). Sampling of the contents of individual packages is not required; activity concentrations may instead be determined by DOE-approved site sampling procedures. All material is to be shipped as "Radioactive material, low specific activity, LSA-II, UN3321."

(4) There must be no leakage of radioactive material from the conveyance. There must be no loose tailings or other contaminated materials on the surface of the covering at any time during transport under normal, non-accident conditions.

(5) Shipping paper descriptions of package contents shipped under this special permit must assume the presence of LSA-II radioactive material, and must use conservative (maximum) values for the total activity and Transport Index (TI) for the container used, based on full containers and a worst case total activity concentration of 10,530 pCi/g, as described in the application. Example conservative total activities and TIs are:

(i) Railcar, content weight of 100 tons: total activity per railcar 0.035 TBq (0.956 Ci), TI 1.6.

(ii) Intermodal container, content weight of 40 tons: total activity per container 0.014 TBq (0.382 Ci), TI 1.4.

(iii) Haul truck, content weight of 20 tons: total activity per haul truck 0.007 TBq (0.191 Ci), TI 1.3.

(iv) Haul truck and pup, content weight of 33 tons: total activity per conveyance 0.012 TBq (0.318 Ci), TI 1.3.

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(6) Each rail car, intermodal container, truck, and pup-trailer must be plainly and durably marked on at least two opposite sides as follows:

For Radioactive Materials Use Only
RQ, RADIOACTIVE-LSA
UN3321
DOE-SP 14283
Gross Weight¹: _____
Emergency Contact²: _____
Emergency Phone²: _____

¹ The gross weight must be either the actual gross weight or the maximum possible for each type of container.

² The emergency contact and phone number are to be determined by the special permit grantee.

The size of the markings must be as specified in § 172.302(b).

(7) The markings must not be removed or covered until the conveyance, including any intermodal container, is radiologically released in accordance with the conveyance release requirements in §§ 174.715(a) or 177.843(a).

(8) Emergency Response:

(a) In the case of an event resulting in the release of radioactive material, the DOE must ensure that procedures are in place so that:

(i) spills are immediately reported to the DOE contractor responsible for the overall management of the specific clean up project;

(ii) the spill area is isolated to protect the public; and

(iii) the spill is cleaned up in an expeditious manner.

(b) The DOE must ensure that a record is kept in a central location of all incidents during use of this special permit which resulted in a spill, including date, time, mode of transport, an estimate of the volume and activity released, and any other details

July 27, 2006

deemed pertinent. This information must be made available to the AAHMS upon request. A summary of this data must be submitted to DOT whenever renewal of this special permit is requested, and upon termination of the shipping campaign.

(c) Reporting requirements of §§ 171.15 and 171.16 apply.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modifications or changes are made to the package or its contents and it is reoffered for transportation in conformance with this special permit and the HMR.

b. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle and rail freight.

10. MODAL REQUIREMENTS:

a. When transporting material under the conditions of this special permit, the shipper must ensure that the truck driver or a member of the train crew have in their possession during transport a current copy of this special permit, the appropriate generic shipping paper, exclusive use instructions, and emergency response instructions.

b. For shipments by rail car, the DOE must ensure compliance with applicable regulations in 49 CFR Chapter II, Parts 200 - 299 - Federal Railroad Administration, Department of Transportation, and in 49 CFR Part 174, except for those citations specifically exempted.

c. For shipments by truck, the DOE must ensure compliance with applicable regulations in 49 CFR Chapter III, Parts 300 - 399 - Federal Motor Carrier Safety Administration, Department of Transportation, and in 49 CFR Part 177, except for those citations specifically exempted.

July 27, 2006

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
- o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
 - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
 - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)– "The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term "exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: As specified in paragraph 7.b.(8)(b) of this special permit.

Issued in Washington, D.C.:



for Robert A. McGuire
Associate Administrator
for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

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PO: FDFerate